GARDEN AND FOREST.

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Horticulture in England and America.

IN some correspondence which we published a fortnight ago a few of the essential points of difference between the principal flower shows of England and of this country were pointed out. More striking, however, than any difference in the material collected for exhibition, or its variety or quality, or arrangement, is the difference in the people, taken in a mass, who visit a flower show in London and those who visit one in New York or Philadelphia. Of course, the real value of any given exhibition cannot be properly gauged by the number or the appreciative interest of those who come to see it, but in the long run the character and quality of a series of exhibitions will depend more upon those who come to see the flowers than upon any other influence. That is, the demand in this case as in others will create and control the supply. An exhibition which is made for the inspection of a thousand persons who have a fairly good general knowledge of plants, who have gardens in which they take a personal interest, who have become specialists in some direction and have devoted themselves to the study and improvement of certain plants or certain families of plants, will be constituted and conducted in quite a different way from one which is meant to please a thousand persons who imagine in a vague way that they love flowers, but who have little accurate knowledge of them and take no personal interest in their cultivation.

In the first instance, the grower and exhibitor knows that any triumph of horticultural skill will be appreciated, and this will insure greater care in producing perfect specimens; collections of different varieties of certain plants will be displayed for the delight of those who can appreciate slight modifications in structure and delicate variations of form and color; and novelties will be shown for those who wish to make complete collections of any class of plants. The exhibition will cover a wide range, because in the broad domain of horticulture there will be hardly a region which has not special attractions for the taste and fancy of many visitors, whose interest must be arrested and held. Altogether different will be an exhibition prepared for persons who lack this precise horticultural knowledge, although their natural taste and appreciation of what is beautiful may be quite as good. Under such conditions more thought will be given to arrangement for general effect. If it is a spring exhibition, for example, we should not look so much for a complete collection of Narcissi as for masses of some of the more showy kinds effectively grouped. Altogether, we should expect an exhibition which would be less instructive from a horticultural standpoint, although it might be more impressive as a spectacle when viewed as a whole. All this means that a typical flower show in any community will indicate pretty accurately how large a place in the life of that community horticulture fills.

The best exhibitions in England are, no doubt, capable of great improvement, but they are better, from a purely horticultural point of view, than ours are, because our people generally know less about flowers and plants, and therefore are less intelligent judges. It is true that an American visitor at an English flower-show is apt to overestimate the general knowledge of the great British public on this subject, even when he remembers that in a small and densely populated country it is much easier to bring together a large assemblage of intelligent plant-lovers than it is in America. In such a place, where every other man one meets is a horticultural expert in some direction, one is apt to think that a knowledge of floriculture and horticulture is universal. A little investigation will soon show that it is really but a small fraction of the English people who have any knowledge of plants worth speaking of, but yet the ratio of intelligent plant-lovers and plant-growers to the entire population is much larger than it is here. This does not mean that the general taste of the English people and their ability to appreciate natural beauty is any higher than it is with us, but that the proportion of the people in the British Islands who take an interest in growing plants of their own is larger than it is in America.

There is no need to state the reasons for this state of things. That America is a newer country; that our population is less fixed, and therefore without such strong local attachments; that we are generally more in a hurry and spend less of our leisure at home; that we have shorter seasons and more trying summers, — reasons like these will suffice without enumerating any of the more subtle influences which help to separate us from our mother country in our habits of life. But, after all, there is nothing which ought to cause discouragement to those who feel that a more general interest in horticulture here would make American life fuller and American homes happier. At the outset our fathers made the natural mistake of copying English methods of planting, which were unsuited to our soil and climate. We have just begun to unlearn our errors of this nature, and the observant eye can plainly detect an encouraging tendency to adapt our horticultural methods to our surroundings and to develop an American horticulture for Americans. There is a great deal to criticise in the gardens of our fashionable watering-places, and in the country estates which some of our men of wealth are making, and their sins against every canon of fitness and refinement are not mitigated by the fact that many of the show places of aristocratic England are quite as offensive.

On the other hand, no part of the world has ever, in the same time, shown such an enormous growth in the business of nurserymen and florists as has taken place in this country during the past ten or twenty years. Much of our horticultural literature, periodical and other, will compare favorably in quality with any in the world. From all parts of the country we hear of projects for arboreta and botanic gardens, and although many of these are crude they are all evidences of a prevalent desire among people to do something in the interest of scientific horticulture. Opportunities for studying the theory and practice of gardening are offered in several of our agricultural colleges, and there is an increasing effort among young people to acquire a

knowledge of trees and shrubs and flowers. Noteworthy, too, is the effort of our growing towns and cities to secure areas for parks and public gardens. Besides this, we already have parks and private places, which, for unity and consistency of design, for breadth and simplicity of treatment and for the absence of features essentially petty and vulgar, are not excelled by any in the world, and inquirers for advice from competent landscape-gardeners are increasing in numbers every year.

Gardens which should be pictures of peace do not naturally find a place in a country where life is a continual struggle with the untamed forces of nature. Large portions of our country are still in the pioneer stage, and even the older-settled regions have not advanced entirely beyond the influence of frontier traditions. We have inherited the idea that forests are inhospitable; that woodlands at the best are only waste lands, and it is only of late years that there has been any development of the sentiment of affection here for trees and native wild growth. The subjugation of nature has been carried on with needless cruelty, and yet, as our surroundings have become more stable and secure, garden-art has kept pace fairly well with other humanizing and civilizing influences. When we once thoroughly learn the great lesson that the highest art is found in following suggestions of nature, an endless variety of climate and of season awaits our effort, and with an untold wealth of native plants America should have the most effective and diversified gardens in the world.

Practical Work for Forestry Associations.

FORESTRY associations have done as yet little more than talk. This is quite natural and legitimate, since their first object is to make propaganda for an enlightened general appreciation of the necessity of rational forest-treatment. Many persuasive arguments must be used before such an appreciation can be sufficiently widespread to lead to action. Meanwhile, here and there the opportunity for direct active and practical work presents itself, if not in behalf of the forest, at least in behalf of the trees in our streets and parks. These are nearer objects to many than forests; they belong to the public, and interest in them may well serve the useful purpose of inculcating that love and intelligent appreciation for trees everywhere which may ultimately lead to the establishment of a sound forest-policy for the country.

The planting of ornamental trees on Arbor Days and on other occasions has been often encouraged by forestry associations, but the Genesee Valley Forestry Association, at Rochester, has entered another field of usefulness in freeing the shade-trees of the city from insect pests. Last year the association offered a series of prizes to the children of the public schools for gathering the cocoons of caterpillars, with encouraging success. This year, in addition to the previous prizes, a special prize of ten dollars was offered to all who would bring a larger number than was brought in 1893 by any one pupil (44,900). As a result, on June 20th, each of sixty-five scholars received a ten-dollar gold piece, with an extra five dollars each to the two boys who had the largest count. The total number gathered and certified to by the teachers was 8,800,200, and the city is relieved of a pest which has in former years driven many families into the country at an earlier date than they would otherwise have sought their summer outings. The money for the prizes, which amounted to considerably more than had been anticipated, was subscribed by citizens, the Common Council adding one hundred dollars, and money was never spent more effectively for such a purpose.

Now, all this is the result of talking, in the first place. The Genesee Valley Forestry Association owes its origin to public talks by two members of the American Forestry Association. One of Rochester's prominent citizens, Mr. Arthur S. Hamilton, took up the ideas advanced and persuaded others to interest themselves in the subject, and so the association was formed, and being composed of business men it looked around for business and found it. Certainly the formation of local associations, which can apply themselves to such definable tasks as that of the caterpillar crusade is to be encouraged as one of the most hopeful agencies in all matters relating to forests and to trees both in city and country.

The Æsthetic Value of Roads and Walks.

IN any landscape-gardening scheme the lines of roads and walks present one of the most important problems. These lines are essential to finish and propriety, but not on account of their own artistic value. They are distinct and prominent in appearance; they are hard and formal, and their general effect is unvarying and intractable. What beauty they have is derived, in the main, not from themselves, but from their accessories and associations. But since they cannot be dispensed with, they must be treated so as to make their special features as unobtrusive as possible. Fortunately, they can be made to help the design in most cases; and they can always be made to injure it. The injury is due to superfluous lines of travel oftener than to ungraceful ones. The very definite and intelligible nature of a drive or walk inclines the designer, whether owner or professional landscape-gardener, to try to give variety and completeness to his large spaces by inserting pronounced lines which, if they are not imperative for reasons of utility, have at least a fixed beginning and end; and on this account seem reasonable and appropriate to minds not yet skilled to grasp the subtile principles of composition, while to the same minds it is difficult to justify indeterminate shapes of planting for which the locality seems to offer no suggestion.

But this is not the only reason superfluous roads and paths are popular. The designer often finds a certain satisfaction in filling up his drawing with oval and flowing curves, and his employers enjoy such drawings still more keenly. Again, a beaten way, especially if its end is not in sight, saves the mind the labor of conjecture as to the best route; if familiar it furnishes a definite length and direction for the journey; if unfamiliar, there is still the certainty that some object is to be reached which will make an expedition worth while. Such reasons as these, though apparently trivial, excite a desire for formal ways for the more practical provision of dry and solid lines of travel when the grass is wet and the mud is soft. People setting out for a walk will usually keep to the hackneyed foot-way, and this irrespective of the time of the year and condition of the ground, even though they are quite sensible of the superior comfort of the turf for walking on. These reasons, and the general attractiveness of curved lines—whether they find their need in the contour of the surface and position of the landmarks or not—have sacrificed many rods of rich grass to strips of costly and useless macadam.

In laying out the courses of beaten track, the first and foremost question is that of utility. When it has been determined what points are to be connected, the lines themselves should be controlled first of all by directness. A beaten way between two points should be the shortest possible; but in landscape-gardening the shortest distance between two points is not necessarily a straight line, or even an approximation to it. The shortest route is always the most convenient, and its course may, therefore, be regulated by the shape of the ground, the position of large trees, the leading to objects of interest or points of vantage for views and similar reasons; while convenience, too, may be considered to rule the bending of a road to avoid intrusion on a lawn, or the construction of lines out of harmony with those of the buildings. For convenience or fitness is quite as important to the useful as to the beautiful.

Thus far, roads have been treated of merely as necessary parts of a design whose special features can even be used to set off and display it in some measure. But they are quite capable of being made to take on an artistic value of

their own. The wheelway bordered with trees has a peculiar charm, derived as much from the associations of traffic as the foliage overhanging the sides; and this charm belongs (though in a somewhat different way) to the formal avenue as well as to the country lane overhung with thick and various boughs. Any one can feel the attraction of a road or path bending out of sight behind a screen of leaves. Occasional openings in the planting, to allow the traffic to be seen from the lawn, often add the one thing wanting to complete the landscape-gardening scene, namely, animation.

And lastly, the lines of permanent way may in themselves be a source of pleasure as they are dignified and harmonious, or unsatisfactory as they are crude and uncertain. Forms so large, definite and diversely sweeping, receiving so many new outlines from the effects of foreshortening, are of actual artistic value if used with due subordination to their surroundings. Few rules can be laid down for the construction of æsthetic curves. An eye naturally good, and sufficient training alone will discover a line that is intrinsically beautiful, and determine how straight lines can best be joined to curved ones, and how they are to be managed at such sudden changes of direction as where two roads meet, and to foresee the effect when they are transferred from the bird's-eye view on the paper to the foreshortened one on the ground. Above all, let them be carefully considered when they can be viewed from a height where the whole scheme, or a large part of it, can be seen at once, and where both its merits and defects will seem more obvious. When, therefore, the general direction has been fixed upon, let the lines of travel be ordered as carefully as those of the boundary; a slight irregularity, or a few inches or feet added to or subtracted from the swell of a curve may pass unnoticed by ninety-nine people; but the hundredth may be the capable critic, in whose judgment the work will stand or fall, and whose voice will ultimately be that of the jury who, in the natural course of things, come to pronounce the final verdict on any work of art.

No part of a design, then, deserves more care than the lines of beaten track; not the care of the expert of the compasses and curve-ruler, who piles ovals upon circles for their own sake, and fits the whole complication into the boundary line with the accuracy of a Chinese puzzle, but the care of the prudent inventor, who has learned not to mistake the means for the end of his art, and to understand that the clumsy works of picks and rollers cannot be objects of beauty unless as mere supplements to the delicate and inscrutable achievements of vegetable nature.

Pittsburgh, Pa. *H. A. Caparn.*

The Tupelo, Nyssa sylvatica.

FOUR years ago we published an interesting illustration (see vol. iii., page 490) of a group of Tupelo-trees growing near a pond in West Medford, Massachusetts. The trees represented show the form which they often assume in low swampy ground in the middle states and New England—that is, they have long lateral branches, spreading horizontally or drooping at a slight angle, and forming a rather broad flat top. Few of our native trees, however, differ so much in habit, and on page 275 of this issue we give the portrait of another Tupelo, or Pepperidge, as it is commonly called in the middle states, which stands alone on somewhat higher ground in Chester County, Pennsylvania. Dr. J. T. Rothrock, to whom we are indebted for the photograph of this tree, writes that it is about forty feet high, with a trunk diameter of eighteen inches, and although it differs essentially in form from the trees in our earlier picture, it is, nevertheless, quite as truly a representative tree as the others. On the stony mountain-sides of Centre County, Pennsylvania, and other parts of that state the tree often attains a height of sixty feet, as it often does in the middle states. In the rich soils of the lower Ohio valley and on the slopes of the Alleghanies, in the Carolinas and in Tennessee, it is occasionally a hundred feet high, with a stout trunk five feet through. The Tupelo is at home in low wet lands among water-loving trees, like the Swamp White Oak, the Black Ash, the Scarlet Maple and the Hornbeam, while it associates on higher ground with Magnolias, White Oaks, Black Walnuts, Wild Cherries, and in its wide range of distribution and under such different surroundings it is not surprising that it assumes various habits. Nevertheless, it is always individual, always picturesque, and if planted for ornament in any situation, low or high, it invariably gives pleasure, for it is a beautiful tree. In form it is always attractive. Sometimes it branches close to the ground, but oftener has a stout, though not long, straight trunk covered with light brown, deeply furrowed, bark, which is often curiously divided into hexagonal sections. The upper branches are twiggy, usually crooked, sometimes so much so that the word "kinky" alone describes their shape. The firm green leaves are glossy, as if they were varnished. They are rarely disfigured by fungi or by insects, and in autumn they turn to a red so deep and glowing that the Tupelo is among the most conspicuous of our trees at a season when the whole forest is aflame. The dark blue fruits are not strikingly ornamental, but they are a favorite food for the robin and the flicker in the autumn.

One reason why the Tupelo has not been more generally planted is that its long roots, with few rootlets, make it a difficult tree to transplant. It is easily grown from seed, however, and while yet small the seedlings can be set out where they are to remain, or by being frequently shifted in nursery rows they can be prepared for safe transplanting later. The wood is soft, but tough and difficuti to work on account of its twisted grain, but the difficulty with which it splits makes it sought for by axemen and others for the heads of beetles, for the hubs of wheels, for ox yokes and similar purposes; it is not durable when exposed to alternations of wet and dry, but when kept constantly in water, and especially in salt-water, it lasts for a long time, and, therefore, gives great satisfaction when used for keels in ship-building. Its beautiful light color adapts it for inside finish, but its liability to warp and check when drying has discouraged its use. It has been recently stated, however, that if the trees are girdled and allowed to stand a year before they are felled this difficulty will be largely avoided.

Besides, the Tupelo, which is also called the Black Gum and Sour Gum in the southern states, there is a variety Nyssa sylvatica, var. biflora, an aquatic tree growing in the ponds and marshes of the southern Pine barrens; the Sour Tupelo or Ogechee Lime, N. Ogechee, a rare and local tree which inhabits the swamps of the Ogechee Valley and western Florida, and the Tupelo Gum or Cotton Gum, N. aquatica, a tree a hundred feet high, of southern range, very common in the bottom-lands of the lower Mississippi valley, and attaining its greatest size in the Cypress swamps of western Louisiana and eastern Texas. In addition to the American species, there is one, Nyssa arborea, belonging to southern Asia and distributed from the Himalayas to the Island of Java, and Dr. Henry has discovered a Chinese species which is known as Nyssa Sinensis.

Foreign Correspondence.

London Letter.

NEW GARDEN PLANTS OF 1893.—A complete list of all the new introductions of last year forms Appendix II. of the *Kew Bulletin*, which may be had from the publishers, Eyre & Spottiswoode. The labor the preparation of such a list involves is much greater than appears on the surface, and such as only an institution like Kew could be expected to afford or undertake. It forms a most handy reference-list, as it includes every plant brought into cultivation last year, and of which any record was published in English or for-

eign periodicals. A reference is given under each plant to the publications from which the list was compiled, and this is followed by a brief description of the plant, sufficient for ordinary purposes, with the name of the person in whose collection the plant was first noticed. It is intended to rearrange these lists in decennial parts. Botanists as well as horticulturists must find such a sweeping together of scattered references and descriptions of considerable usefulness.

Lathyrus splendens.—We are anxious to know more about this plant. I have seen several references to it in Garden and Forest, but never saw flowers of it till to-day, when a correspondent in the Isle of Wight sends it for name. What a gorgeous thing it is! the flowers as fine and effective as the flowers of Erythrina crista-galli. Is it hardy in the northern states, and is it successfully grown in gardens in America? I see Mr. Orcutt, in Garden and Forest, calls it the Pride of California and says it likes plenty of heat. Mr. Kellogg's description of it as a perennial climbing vine which creeps over bushes, and when in flower presents the illusion of a grand flowering shrub, whets the desire for it. I cannot understand how so beautiful a plant, which was discovered in southern California seventeen years ago and evidently has been cultivated in American gardens a dozen years at least, should have remained unknown to us here till now.

Primula imperialis is still with us, a fine specimen of it being now in flower in a cold greenhouse at Kew. It will be remembered that this species first flowered at Kew in 1891 after many attempts to introduce it from its alpine home in Java, where Wallace saw it thirty years ago with flower-stems three feet high and leaves eighteen inches long. Until it was grown and flowered at Kew, side by side with the Himalayan P. prolifera, the wide difference between these two, which had been previously united as one species, was not fully recognized. The "Royal Primrose," as Mr. Wallace calls it, is a glorified P. Japonica with orange-yellow flowers. I believe Messieurs Lemoine & Son, of Nancy, possess a stock of it. I may warn cultivators who wish to succeed with this species that it cannot bear bright sunlight—a moist, partially shaded, cool-in-summer position being what it prefers. It also likes rich loamy soil and plenty of water.

Phormium Hookeri.—This plant is now flowering for the first time at Kew. It has dark-green flaccid leaves six feet long and nearly three inches wide and compound spikes of yellowish-green flowers, the tallest spikes being six feet high. There is a marked difference between this and P. tenax, the New Zealand Flax, both in foliage and flowers. Sir Joseph Hooker, when describing P. Hookeri from a plant flowered in a garden in Cornwall seven years ago, says it was first sent to him by Mr. R. Gunn, of Tasmania, who found it in 1864 on the Waitangi River in New Zealand, where it grew pendulous from almost perpendicular rocks in great abundance. The Kew plants are grown in the temperate house, but I have seen examples in the open air in Cornwall, and for several years three plants flourished in a sheltered corner out-of-doors at Kew.

Elæocarpus cyancus, also called E. reticulatus, is one of the most charming of greenhouse shrubs, a plant of it six feet high, with a bushy head, being now covered with racemes of elegant white drooping bells half an inch long and wide and beautifully fringed. Grown in a pot in a sunny place out-of-doors during summer and housed in a cold greenhouse in winter, this shrub flowers freely and is most decorative. The leaves are oblong-lanceolate, three inches long, dentate and dark green, the racemes springing from the axils of every leaf. This species is a native of Australia, from whence it was introduced in 1803, but I question if it is known in half a dozen gardens in England now. According to Bentham, it sometimes forms a tree sixty feet high. In addition to the flowers the drupe-like torquoise-blue fruit are very ornamental. Elæocarpus is a large genus of Tiliaceæ.

Mitraria coccinea is a beautiful little pot-shrub which deserves a place in every collection of conservatory plants, or it may be grown out-of-doors in such favored localities as Cornwall and south Ireland. It grows very freely, forming a dense bush if the shoots are kept in check by pinching during growth, and it flowers freely and continuously in spring and summer. Years ago it was a popular plant in English gardens, and I remember it being grown by market-nurserymen in a provincial town, where it soon became a popular window-plant. It has small bright green, ovate-toothed leaves and axillary flowers, which hang downward on slender stalks two inches long, each flower being a fleshy bottle-shaped tube over an inch long, colored bright scarlet, with a tinge of yellow in the throat. It is a native of the island of Chiloe, and was introduced by Messrs. Veitch, who first showed it at Chiswick in 1849.

Lychnis Viscaria, a British plant, has been improved by cultivation and selection until we have now in the variety called Splendens a superb plant for the open border, or even for summer bedding, two large round beds of it being now very attractive at Kew. The root-stock is woody and perennial, the radical leaves about six inches long, narrow, lanceolate, and the flowers are in erect crowded panicles a foot and a half high, each flower an inch across, double, and of a rich carmine-pink color. In color-effect they are equal to the brightest of Brompton Stocks, but the panicles are more elegant. This is the third year that these two beds have made a good display in June. Probably the excessive wet of the last few weeks has been favorable to the plant, for it is finer this year than it has ever been. It is easily propagated by division. The Kew plants came originally from Messrs. T. Ware & Sons, Tottenham.

Aristolochia Goldieana is still one of the most wonderful of all flowers, although the advent of A. gigas Sturtevantii has familiarized us with big-flowered Birthworts. There is, however, a wide difference between these two, for, while the latter is a robust, free-growing, free-flowering vine, with the limb of the enormous flower flattened out, suggestive of a very broad-brimmed hat, A. Goldieana sends up its stems annually from a tuberous root-stock, and flowers only on the very young shoots. The buds are formed before the shoot is a foot long, and then a struggle takes place between bud and growing shoot; if the bud gets the upper hand it develops rapidly, and the shoot grows slowly, but if the shoot wins in the struggle, then it grows as fast as a Bean, and the bud falls off. At Kew, A. Goldieana is flowered almost every year. It is grown in a pot in the hottest house, where, during summer, it receives liberal treatment till the shoots ripen. It is then forced to rest and kept quite dry till the following spring, when it is shaken out of the old soil, repotted in peat and loam, and kept in a perpetual steam almost till the buds are well advanced. Unless this treatment is carefully followed out A. Goldieana will not flower. And what a flower it does produce, a succulent funnel two feet long, contracted and bent over in the middle, and then widening upward, till at the mouth it is over a foot in diameter, with three short tails. The color of the lower part of the tube is pale yellow, the upper being green-yellow, with purple reticulating veins; inside the mouth is orange, with a thick net-work of purple lines running into a blotch of purple at the apex of the hairy trap-like throat. A. Goldieana is a native of Old Calabar, where it grows in woods, the flowers resting on the ground. It can easily be tracked from a long distance when in flower by its powerful and disagreeable odor.

London. *W. Watson.*

Plant Notes.

Ipomœa rubro-cœrulea.—This Morning Glory has, of late years, been cultivated in California under the name of Heavenly Blue, a title which can hardly be called an exaggerated description of its color, which is that pure tint seen in the flowers of Salvia patens. At one time the plant was said to have originated in the garden of a California florist, but

there is little doubt but that it is the same plant which was cultivated under glass in England sixty years ago, and it probably reached southern California by the way of Mexico. Mr. E. D. Sturtevant writes that in his opinion it is the most beautiful annual climber in cultivation. It is entirely distinct from the common Morning Glory and produces flowers sometimes three and three-quarter inches across. Last summer, in California, it covered a fence on Mr. Sturtevant's grounds sixty feet long on both sides, and at one time the fence and foliage were both nearly hidden by the mass of flowers. It has also been grown in New Jersey for two seasons, where it climbs to a height of some twenty-five feet, and though coming into bloom late it amply repays cultivation there as it will elsewhere.

AMORPHA CANESCENS.—We have more than once called attention to the Lead Plant of our western prairies, one of the best of the leguminous shrubs which bloom at this season. It has bright blue flowers, which appear in a terminal panicle of slender racemes, and last a long time, and their beauty is increased by the soft gray color of the foliage. The plant looks much better when it is cut back after flowering, as it assumes a more compact growth and the

Fig. 46.—A Tupelo (Nyssa sylvatica) in Chester County, Pennsylvania.—See page 273.

leaves grow much larger. It has deep roots, which enable it to endure drought, and it will be found attractive and interesting in any shrubbery.

Rose Crimson Rambler.—Plants of this Rose were not received in America until late last autumn, and growers who wished to work up a stock could hardly afford to take the chance of losing them, and therefore few were left out-of-doors during the winter to test their hardiness. The Rose has bloomed in several commercial Rose-houses this year and has fulfilled all that was expected of it as a free and rapid grower, with good substantial foliage and abundant flowers, which are of a rich color, without any tint of purple, and which last a long time when cut. We have heard of some plants that came through the winter without any protection, but so far as we know none of these have flowered. It is to be hoped that the Crimson Rambler will prove hardy because there are few good hardy climbing Roses, and its large corymbose clusters of blood-red flowers, glowing in the sunlight, would make it an admirable plant for the decoration of porches. We have spoken of this Rose several times within two years, and Mr. Watson gave its history in one of his interesting weekly letters. It was brought from Japan by an engineer named Smith, who sold it to a Mr. Janner, of Edinburgh, from whom Mr. Turner purchased it, leaving only one plant with Mr. Janner. It is quite hardy in Scotland, and the original plant has attracted much attention on the front of the dwelling-house of its owner. The plant received a first-class certificate under the name of "Engineer" from the Royal Horticultural Society as long ago as 1890. It is one of the many forms of Rosa multiflora, some of which are perfectly hardy and some are not. Any one who has tested it out-of-doors will confer a favor by reporting upon its behavior.

Gladiolus aurantiacus.—This is among the earliest to flower of the true species of this genus, which are not sufficiently hardy to endure our winters. It has attractive flowers of a reddish-orange shade on a lax spike, the small inner segments being somewhat greenish. They are of moderate size, widely opened, and are borne somewhat sparsely. G. Leichtlinii is a handsome species, with pure salmon-colored flowers of the same general form and habit.

The Gromwells.—We have in former volumes spoken of Lithospermum prostratum as a valuable half-shrubby plant for rock-work with the intensely blue flowers which characterize several other members of the Borage family. It does not seem to be perfectly hardy in the cold portions of the country, for, although it will survive our winters, it seems to get weaker, and finally dies out. Where it will live it needs a warm dry place, and is then singularly pretty. Some time ago one of our correspondents wrote of growing it in a suspended pot, and as the stems are naturally of a recumbent habit, they hung over the pot on all sides, completely hiding it with foliage and flowers. Our native species, Lithospermum canescens and L. hirtum, are not often grown, but the first has handsome hoary leaves and deep yellow flowers in May. L. hirtum is also a useful plant either on the front border or in the rockery, as it makes a low growth and bears abundant racemes of deep chrome-yellow flowers. Both plants have large thick roots, and yet they seem to bear removal very well.

Cultural Department.

Notes on Trees and Shrubs.

THE latter part of June is the season in New England when the characteristics which separate the two hardy American species of Catalpa, or Indian Bean, are most readily observed. Generally, a good deal of difficulty is experienced in attempting to tell the difference between the old C. bignonioides or C. syringifolia, or C. Catalpa, according to the revised nomenclature of Professor Sargent's *Silva of North America*, and the more recently distinguished and described Catalpa speciosa, which is now preferably planted on account of its more hardy character and finer proportions as a timber and shade tree. Young trees of both species, seen now in this region, may be instantly distinguished by the flowering. C. speciosa has been in flower for the past two or three weeks, and now (June 30) about the last of the flowers are falling. The nearly pure white corollas are more than two inches across and quite two inches from the end of the lip to the base of the tube. The bottom of the tube and its entrance are strongly marked with two bands of yellow blotches and numerous small purplish dots and lines. The calyx-lobes are of a rich purplish-red color. The flowers are produced in large, loose few-flowered panicles, and they have a delicate sweet odor.

Although these blossoms are now fading away the flower-buds of the better-known Catalpa Catalpa are yet quite small and are not likely to expand for two weeks yet, so that it may be said there is a month's difference in the time of first flowering of the trees. The flowers of C. Catalpa are smaller, much more numerous and crowded in the panicle, and the panicles are smaller than those of C. speciosa. Both species are well worth planting as ornamental flowering trees, aside from their value for shade or other purposes. They begin to blossom freely when not more than eight or ten years old from seed and bear flowers annually afterward.

Outside of the flowers, other less marked specific differences are found in the generally smaller size of the leaves of C. Catalpa and their peculiar disagreeable odor when bruised, whereas there is little or none of this odor in the leaves of C. speciosa. The bean-like pods, too, of C. speciosa average longer than those of C. Catalpa, often being eighteen or twenty inches long. The most important point of interest to northern cultivators of these trees is found in the fact that C. speciosa is much the hardier of the two species. Growing side by side in the Arboretum during the past eight years, C. speciosa has, without exception, been alive to the tips of its branches at the end of every winter, while the longer-known species has been more or less killed each year. This applies to young plants particularly, for, as the trees get older, they become well established and seem perfectly hardy. In some situations even in this climate they may not show any unusual lack of hardiness when young. Something also depends on the locality whence the seed is procured. That C. Catalpa is hardy here is proved by the fine specimens to be seen about Boston.

Compared with many other kinds of deciduous trees, the Catalpas may be considered as fast growers. A group of eight trees of Catalpa speciosa which were planted on a gravelly hill-side averaged about five feet high when they were set out in the spring of 1886. They have been allowed to branch out at four or five feet from the ground, and now have trunks eight or ten inches, or in one specimen a foot, in diameter, and average nearly twenty-five feet high. An equal number of the less hardy species planted at the same time in the same situation, and of the same size when set out, can hardly be compared with the C. speciosa, as all but two of the original plants have been replaced by others, and the remaining plants have a diseased and stunted appearance on account of frequent and severe injury in winter. During most of the time since these trees were set out grass or hay has been allowed to grow about them. The soil not being rich, the trees were originally planted in specially prepared holes filled with good soil in order that they might have a good start.

Catalpa ovata, better known as C. Kæmpferi, a Chinese species, comes into blossom as the flowers of C. speciosa are falling away, so that it fills the gap between the extremes of flowering of our native species. Its flowers are small, expanding scarcely more than an inch across, and are numerously produced in rather small compact panicles. These flowers are of a distinctly pale yellow color, marked by the two orange-colored bands characteristic of Catalpa flowers, and heavily spotted with purplish-black dots and lines around the mouth and interior of the tube. While they are interesting they are not nearly so handsome as the much larger and almost pure white blossoms of our native species. In winter, C. ovata may be readily distinguished from its American congeners by the much smaller, more slender and much more numerous pods which hang on the branches. It is a slower-growing and smaller tree than our species.

Catalpas may be very easily raised from seeds, which, if not allowed to become too dry after ripening, will germinate readily within three or four weeks after planting. They should have a very slight covering of soil, and will soon germinate when lying on top of the ground if it is kept moist and shaded. The cotyledons, or seed-leaves, are very deeply divided, so that as they expand the little plantlet, at first sight, seems to have four rounded or obovate leaves.

Arnold Arboretum. *J. G. Jack.*

Fertilizers for Orchards and Vineyards.

NITROGEN is the element of plant-food which fruit-growers are cautious about giving to their trees. It has been observed that fruit-trees growing in rich enclosures about country houses and in old family gardens often lose their fruit-buds for the apparent reason that their wood-growth is tender, while trees on land which contains less nitrogenous matter grow more slowly and ripen their wood more perfectly. This is the reason why the advice is so often given to dress orchards and vineyards with phosphoric acid and potash alone. Wood-ashes and bone-dust have been considered the most suitable mixtures for fruit-trees, although the German salts are, no doubt, quite as useful for furnishing potash, and even the rock phosphates make a fair substitute for bone, since they do not leach out of the soil, and what the trees or vines do not get one year they can use afterward.

But, after all, nitrogen is an essential to all plant-growth. The leaves which fall from the trees, the clippings from the vines, the weeds that are turned over in cultivation, all add considerable nitrogen to the soil. Sometimes, however, this will not suffice, and Mr. J. H. Hale, who is one of the most careful and intelligent fruit-growers in the country, lately wrote that he had spread broadcast two tons of nitrate of soda over a peach-orchard of twenty-two acres, and that in less than a week a tremendous growth began and the foliage looked much darker and richer. Now, of course, enough nitrogen to keep up such a growth during the year might carry the trees into winter with unripened wood and tender buds, but the condition of this orchard was peculiar. It was on light, sandy soil that had an abundance of potash and phosphoric acid, and had heretofore been cultivated in the early part of the season until the first of August, when the trees were allowed to ripen their wood. The land was so poor, however, that few weeds or other green material grew after the cultivation had ceased, so that there was little nitrogenous matter to turn under in the spring. The orchard has borne several crops of admirable fruit, but for two years past the new wood-growth has not seemed sufficient. Under these circumstances Mr. Hale made his application of nitrogen. The trees are carrying now only a moderate crop of fruit, but this, too, has been stimulated to a remarkable growth, so that it is now one-third larger than any fruit which has ever been seen on Mr. Hale's place at this season.

There can be no doubt that the application of some nitrogen under these circumstances was advisable. The only question is as to the amount and the time of application. It would naturally be supposed that early spring was the time for using nitrate of soda, which is very soluble and which can be taken up by the roots of the trees as soon as they begin to work. Perhaps a smaller amount would have answered the purpose. Of course, where farm-yard manure is available no extra nitrogen supplies would ever be needed in orchard or vineyard, but the result of this treatment upon Mr. Hale's trees will be looked forward to with interest by all those who try to use fertilizers intelligently.

New Haven, Conn. *S.*

Forming the Heads of Fruit-trees.

I HAVE just read a statement to the effect that a fruit-tree properly pruned when planted out will need no further pruning to form a satisfactory head. I am tempted to suspect that the propounder of this idea has just been putting out his first orchard. In forty-odd years of nursery and orchard work, I have never yet been able to formulate any hard-and-fast rule as to pruning fruit-trees, even of a single species or variety. In tree-surgery, as in the practice of the profession upon human subjects, I have felt compelled to study each case by itself. In a large orchard of many varieties and species one will find, as time wears on, that there is an individuality which demands respect, even in trees of the same variety—dependent upon soil, climate and exposure as regards the winds, the slope of ground, and a number of other points that will arise as the work goes on.

Certainly, if we consider the small size of an ordinary nursery tree, we can at once see that when allowance is made for the necessary bare trunk there is far from being sufficient space left to form the necessary head. In a short time this space, as it exists, would be demanded by the diameter of one or two limbs of a medium-sized tree, especially in the case of Apples and Pears. In my own practice I do not consider that ultimate size and distance at all. I prune with the view of giving sufficient light and air to the tree as it is, using some judgment and foresight, of course; but well knowing that we cannot foresee with much exactness all that the tree will require as it increases its size. Though well along in the last decade of my legitimate three-score and ten, I am now forming the heads of orchards of Apples, Pears and Plums set within the past six years. Visitors, and I have a goodly number of them nearly every day, remark upon the unusual uniformity of the whole orchard. In older orchards of mine—some of which were set immediately after the close of the war—the same uniformity is noted and commented on, yet the whole work of training these trees has been empirical, and I am still unable to discover a better way. A very able member of my profession has said, "There are now no more diseases; there are only cases"; and I find this rule to apply excellently in my orchards. I treat every variety and each single tree by itself, and yet by due care I am able to impress upon whole orchards a sort of uniformity with variety by my adherence to the leading principle—which is, to gradually form a symmetrical open head by moderate yearly pruning and disbudding.

One of the greatest hindrances in accomplishing this is found in the influence of the south-west winds of summer, which tend to press all the new growth over to the north-east and cause it to become fixed in that direction, by the "splinting" effect of the new wood upon the old, as it becomes firmer. This "set" cannot be entirely overcome; yet the spring pruning, rightly conducted, reduces it to such a degree as to excite comment upon the erect growth of my orchards. The pruning of young trees in spring for this purpose is pretty severe; but as every tree is visited weekly during the growing season, there is not time for much of a "set" to take place. A photograph of my orchards would show this erectness in a striking way, as compared with other orchards not so carefully treated. Perhaps one additional reason is that I plant all my orchards north and south in the rows twice as close as they are to remain. As most of my varieties are early bearers, with the rather dwarf growth characteristic of Russian fruit-trees, and of most of our native ironclads, I not only get this mutual protection for my young trees from the full force of the summer winds, but also get a great deal of fine marketable fruit during the six to ten years before the thinning-out process becomes necessary. I may add that I choose a northerly slope for all my orchards; and they are tilled and cropped with Beans and Strawberries until in full bearing. Besides this, Currants and Gooseberries are planted between the trees in the rows with great success, yielding crops even better than when planted in full sunshine. Following this plan, my orchards begin to give a profit from the start; first, beans, then strawberries, then currants and gooseberries, and finally apples. Manure and fertilizers are applied so as to keep up an annual growth of new wood on the trees not less than fifteen inches in length. It is not until nearly twenty years after planting that the ground is wholly abandoned to the trees, and these thinned one-half, as stated above.

Newport, Vt. *T. H. Hoskins.*

The Flower Garden.

AFTER the main flowering of the hardy Roses and the advent of hot weather the garden takes on new aspects, as the annuals and tender plants become more prominent. Hardy plants there are still, with flowers in abundance. The cheerful Coreopsis lights up the garden as do few other flowers, and quite pales the blooms of the yellow Chamomile, Anthemis tinctoria. This is also the season of the Hollyhocks, the Larkspurs and the Foxgloves, all most effective flowers, and some tall Bellflowers are showing their white or purple bells, Platycodons the largest of all. This is also the season of Japanese Irises, which quaintly and at the same time gloriously finish the main flowering of the genus, as they show their flamboyant beauties. If these are white there cannot be too many of them in any garden. Many of the Kæmpfer Irises are handsome, but good white flowered varieties of the species are among the most beautiful and precious of all flowers. They not only wear a quaint grace and elegance in the garden, but are very charming in the house. They should be cut before the petals are unrolled and as they show signs of loosening. They open up perfectly when the stems are plunged in water. This is a flower that the florists should add to their limited list.

Other hardy flowers are worth naming, but in this hot season, when one's garden energy begins to fag, the annuals, with their profusion of bloom, are counted on for the main supply of flowers. The first Poppies are passed, and one has a chance to secure another crop from the cleared space, always a welcome opportunity in a small garden. I have said before that fall-sown annual Poppies will give a crop of enjoyable flowers while the leaves of the early-flowering bulbs are maturing,

and at present such a bed waits for its third set of plants. These will probably be Cosmos for fall flowers. Cosmos, beautiful in foliage and flowers, seems to be an accommodating plant which can be topped or layered; it takes root wherever it touches the ground. As it is naturally tall-growing and often needs late protection, it seems to be worth while to try pegging it down. A bed well covered with these finely cut leaves and graceful flowers at a moderate height should prove effective. Sweet Peas are, of course, in full beauty and fragrance. I am trying this year Emily Henderson, Blanche Ferry, Mrs. Gladstone, Countess of Radnor, Orange Prince, Apple Blossom, Senator, Mrs. Eckford, Delight and a few others. I rate them in the order named. Emily Henderson leaves nothing to be desired as a pure white flower of good size and substance and is most prolific. Its white is as pure as that of the white perennial pea. Blanche Ferry is well known as a most beautiful and valuable pink. Mrs. Gladstone is a salmon-pink, very delicate and pleasing, and Radnor an equally satisfactory lavender. I fail to discover any satisfactory primrose color in Mrs. Eckford, the latest offering in this approach to yellow. The darker flowers interest me little, and I find that while some of the bluish ones, especially those which, like Lottie Eckford, have bluish tints on white, are charming when first plucked, they soon become degraded in color. The culture of these always charming flowers offers few difficulties if one can arrange to have the flowers promptly plucked.

The fall and self-sown annuals, such as Calliopsis, Nicotiana, Centaurea affinis, Chrysanthemum, Myconis, Poppies and Argemone, come into flower earlier, and are stronger than those which have been sown under cover in the early spring. It is strange how long some of the hardy annuals will linger in a garden. I found a few plants the other day of Baby's-breath, Gysophila muralis, a delicate little plant which I do not remember to have seen for two or three years, and of which seeds have certainly not been sown for twice that time. The fashionable Ragged Sailors, Centaurea Cyanus, is a much too prolific and weedy subject in a small garden, but they furnish great quantities of flowers. Sweet Sultan, C. suaveolens, is a much handsomer Centaurea, and its bright flowers, with large smooth ovaries and thread-like petals, are among the most distinct and satisfactory annuals now in flower.

Elizabeth, N. J. *J. N. Gerard.*

Gooseberries.—The greatly increased demand for this fruit is even more noticeable this year than it was during the two previous seasons, and it is of growing importance that we should be able to raise fine gooseberries without mildew or other loss. I have for the last ten years had no trouble either with the native or the foreign varieties of this fruit. Formerly I was much troubled with mildew. My plan now is to grow on high well-drained soil, in rows running north and south, and well open to the sun. There is no danger from shade if the land be open and well drained. The plants should be in rows, easily cultivated with a horse, and the soil often stirred in the spring. I do not think it pays us to grow the natives like Downing and Houghton and Smith, so long as we can just as well grow the larger sorts. Industry has never done well with me, but others report that it is prolific. Crown Bob and Whitesmith are two of the best of foreign parentage. But better yet is an old sort we have had for sixty years, and known only as the "Irish Gooseberry." The earliest and richest I have is a wilding, which resembles the foreign sorts in bush, but has a fruit like Houghton in color, but much lighter red. It bears abundantly, and is ripe about the 1st of July. It is evidently a cross between the foreign and native species. Columbus and Red Jacket, I think, are emphatically valuable introductions. There is room for a new race of cross-bred Gooseberries.

Clinton, N. Y. *E. P. P.*

Correspondence.

Bulbous Plants in North Carolina.

To the Editor of Garden and Forest:

Sir,—We are having now (June 29th) superb flowers of Gladiolus from seed sown in April of last year. The spikes are strong and full as any of those from large old corms. These seedlings (Gandavensis hybrids) were left in the ground all winter, and grew off and began blooming earlier than the old corms that were lifted last fall. Late April seems rather too late for sowing Gladiolus-seed in this latitude, as many of the young seedlings were cut off by hot weather in May. Sown here early in March, almost every seedling will reach a blooming size. The seedlings left in the ground last fall were well up by the middle of March, and had seasonable weather to get strong before the hot weather began. Old corms of Gladiolus continue to grow here much later than I have ever seen them grow in Maryland, and the consequence is that many of the offsets, besides the main ones at the top of old corms, get large enough to bloom. Last spring I selected six good-sized corms in order to note their natural increase. All were lifted, separated and replanted this spring. I have just counted forty-six that are blooming, or certain to bloom, while the whole number that will flower next year will be over a hundred. When Gladioli increase in this way, and grow with certainty to a blooming size in one season, why should not our people enter the lists for the production of these plants for market?

In Roman Hyacinths, Ascension Lilies, Narcissi, and early Tulips we can show equally good results, and if we could only persuade market-growers to make a fair trial here we believe that in a short time we could supply most of the bulbs now imported for forcing, as we have done in the case of the Tuberose. While the Polyanthus Narcissus in all varieties are hardy here, when properly treated, we find it necessary to treat them differently from other classes. If planted in autumn they at once make such strong top-growth that when freezing weather comes they are apt to be seriously injured. But if the planting is deferred until late December or early January no such trouble is experienced. Narcissus dubius or Paper White is particularly liable to injury if planted too early. In the ripening of these fall-planted bulbs our long spring season is a great advantage, as they have a cool growing season from January until May before the sun gets hot enough to hasten their ripening. They therefore attain a full development of bulb, and Roman Hyacinths, which bloom with us in the open air from Christmas to March, make bulbs of a size I have never seen equaled in any of the lots sold by seedsmen. We are making arrangements to have some Lilies grown in the deep peaty soils of the counties bordering on our sounds. This section, where the soil is a mass of decomposed vegetation of unknown depth, ought to be the ideal place for Lily-growing. These lands are found in the counties of Onslow, Hyde, Tyrrell, Dare and some others, and more fertile soils do not exist, while the climate is much milder than it is here.

Raleigh, N. C. *W. F. Massey.*

Our Native Persimmons.

To the Editor of Garden and Forest:

Sir,—Almost three-score years ago I drove twelve miles to get a half-bushel of small persimmons. I took them home hard and green, and under exposure to frost and sunshine they ripened. During all these years this fruit has interested me, and for three years past, when all our other fruits have been failing, the persimmon interests me still more deeply. They never fail, and by selecting the best varieties from early to late we can have them fresh for six months in the year, and when properly dried they are not to be despised during the remaining six months. That the persimmon is an astringent fruit only fit for opossums and raccoons is a great mistake; that they are not good until touched by severe frosts is another mistake. I have two varieties that begin to ripen in August, and are nearly gone by the time severe frosts occur. I have others that hang on the trees in a dry winter until March. Although I have been a nurseryman for fifty years I have not yet learned to grow young trees successfully, and, therefore, have no trees to sell, but can furnish grafts at the proper season at moderate prices. My only success has been in crown-grafting. But recently the owner of trees which bear the largest fruit I have yet seen has hit upon a plan of spring-budding which has proved successful, and in this way stock may probably be grown to meet the increasing demand for trees.

I have seen groves of a hundred trees in fruit without an individual tree worth growing. Ten years ago I offered $5.00 for the best persimmon, and fruits came from all quarters—one from St. Thomas, Cole County, Missouri, and I now have a tree grafted with this variety which bears bushels every year. Seedling-trees which spring up on my place are left until they fruit. If the fruit is superior I have a good variety, if not I graft the tree with something better. I have now eight varieties, all of which I consider worth having.

Early Golden came from E. A. Riehl, Alton, Illinois. It commences to ripen in the latter part of August here, is a rich golden yellow, with few seeds and of excellent quality. It bears well and regularly.

Kansas Seedless is the name of another, but it is not seedless altogether. Some fruits have but a single seed, and some

small ones no seed at all. It ripens with the first named, is yellow, of excellent quality, and bears abundantly.

Josephine. This I discovered on the edge of the river-bank a few miles from here, and now have a fine tree from grafts. It also commences to ripen before frost, and is of superior quality, but has plenty of seed. I have measured specimens of this variety two inches in diameter.

St. Thomas. This ripens after frosts, and the fruit dries on the tree, so that a peck was gathered from it in March the following year, when the cedar-birds commenced to eat them. The fruit must be fully ripe before it loses its astringency, then it is delicious.

Marion. This variety bears the largest fruit of any in my collection, and has but few seeds. Out of eleven fruits I counted but fifteen seeds. The quality is not quite so high as that of some others, but its large size and few seeds make it valuable. J. H. Marion, of Fulton, Callaway County, Missouri, is its originator, and he is propagating it, I understand. This variety needs frost to ripen it.

Ruby. This is a seedling, and the fruit, although small, is so handsome and the foliage is so abundant that it is worth planting. The fruit hangs on all winter.

Of seedlings raised about one-half will be barren, but the sex of the tree can be distinguished at its first blossoming. The fertile flower is not very beautiful, but that of the barren tree is something of the form of Lily-of-the-valley, and is very sweet.

Bluffton, Mo. *S. Miller.*

Woodlands of New England.

To the Editor of GARDEN AND FOREST:

Sir,—I have more than once stated that I cannot but regard the impression erroneous that northern New England is being rapidly divested of its forests, and is liable, therefore, to become a dry and barren waste. After a residence of nearly thirty years in northern Vermont, with occasional trips through various portions of the upper Connecticut valley and northeastern Maine, I still find ample grounds to sustain my belief that while trees valuable for timber in the more accessible parts along the water-courses have been considerably thinned out, and that the cut, as now shown by the annual "drives" down the Connecticut, the Kennebec and the Penobscot rivers, is made up mainly of a considerably smaller growth than those which were familiar to me as a native resident of the Kennebec valley between 1828 and 1849, yet the actual extent of these great forests, and their present value as a source of future supply, is very slightly impaired.

Aside from the great timber-forests, there was a time between 1850 and 1870 when the woodlands along the lines of railroads were being rapidly denuded of their smaller tree-growth for locomotive fuel and for charcoal. But this ceased almost at once when mineral coal and coke were found to be cheaper and better for nearly all uses. A recent and somewhat extended trip through such forest-territory really astonished me when I noted how rapidly all of it had been again covered with a thrifty growth, which has filled all gaps, and is, in fact, encroaching to a considerable extent upon once cultivated fields.

Some persons who have read my statements on this subject have rather hastily assumed that I hold the belief that a let-alone policy is all that is required in this matter. That is a mistake. I well understand that forests, like farms, may deteriorate; and will deteriorate of necessity without intelligent care. As a farmer, and as a writer for the press, I have been always urgent for sound teaching in our agricultural colleges upon all subjects connected with woodlands as well as plow-lands. I have looked for such institutions to furnish us with men capable of rightly caring for and managing all landed property. But I think many readers who criticise me are unaware of the fact that our great owners of forest-lands—perhaps I should say timber-lands—are not all ignorant regarding their interests in this particular. Such men are in many ways careful of those interests, and have their rules as to systematic cutting, as well as to the prevention of damage by fire. If really competent foresters were to be had—men who fully understand our American forests and their conditions—I believe that supervisory work would be ready for them. There is an immense amount of money invested in New England woodlands; and owners are far from being indifferent in regard to their management and preservation. But as yet expert foresters, who understand American needs and conditions, are very few in number.

Newport, Vt. *T. H. Hoskins.*

Recent Publications.

With the Wild Flowers. By E. M. Hardinge. New York: Baker & Taylor Co.

This little book is another attempt to bring before young people some of the elementary facts of botany and to explain some of the intricacies of vegetable structure in familiar language. Of course, it is not possible to go very profoundly into the science of botany or any other science, in fact, without the use of technical terms, and most efforts of this kind must fail in point of clearness and accuracy. It is a mistake to suppose that people who are really desirous of learning anything have minds so sluggish that they cannot acquire the language of that science as fast as it is needed. Mr. Hardinge asserts in his preface that such words as "dicotyledons," "angiosperms" and "polypetalous" "excite loathing" in the pupil. But this is an exaggerated statement. Whenever the necessity arises for inviting attention to an object or a process there is need of a word to describe the thing or the action, and while it is true that language ought always to be plain and easily understood, and that it is foolish to use words beyond a pupil's intelligence, nevertheless it is always indispensable that his knowledge of scientific terms should keep pace with his knowledge of scientific facts. Scientific language properly used is never a hindrance and always a help, and one who is apt to teach can make the study of the words and phrases which it is necessary to employ quite as interesting as the study of the plants the student is investigating.

The separate chapters of this book are not logically connected, but they treat of different subjects which are suggested as the season advances. Indeed, the matter contained in the book has appeared before in the form of contributions to different periodicals, and this will account for its lack of system. This is no objection, however, to a book of this character, the chief value of which is to arrest attention and to excite in the young reader an interest in plants and prompt him to examine them for himself. No one can acquire any considerable knowledge of botany by reading what some one else has written about it. Whenever a boy or a girl begins seriously to examine plants and their structure, to compare them, to mark their points of similarity and difference, he has entered the path which will ultimately lead, if he continues to walk in it, to a knowledge which is genuine and scientific so far as it goes. The subjects of the book are well chosen to arouse such an interest, and although it is written in a style that is rather too intense for the subject, it is a good book to give to bright young people to read during their summer vacation. The illustrations are better than those of most other books of its class.

Glimpses of the Plant World. By Fanny D. Bergen. Fully illustrated. Ginn & Co., Boston.

Miss Bergen's book is somewhat less ambitious than the one noticed above. She talks to children about the beauty of early awakening nature, the charm of wild flowers, and adds a little about plants of low degree, such as the Mushrooms, the Yeast Plants, the Sea-weeds, the Ferns. Then the structure of the flowers and their seed-bearing are explained in a familiar way easy of comprehension to a small child, and yet accurately and practically. The descriptions are illustrated plentifully with well-drawn pictures. Books of this character, although not strictly scientific in method, have a genuine value, so long as their statements are accurate, since they tend to give an impulse to a child's life which may develop into an ardent love for nature, and this in maturer years will help to brighten life with one of its purest and most satisfying pleasures.

Notes.

Two-tenths of an inch only of rain, precipitated in one short thunder-shower, fell in the neighborhood of Boston during the month of June. This is probably the smallest recorded rain-

fall for the month in that region, where the average is rather more than four inches.

Parts 103, 104 and 105 of Engler & Prantl's *Die Natürlichen Pflanzenfamilien* have just reached us. They contain the completion of the Leguminosæ, by Taubert; an instalment of Compositæ, by Hoffmann; Begoniaceæ and Datiscaceæ, by Warburg, and Cactaceæ, by Schumann.

The great logs and tree-trunks of which the Washington State Building, on the Chicago Fair Grounds, was composed, were recently loaded on a schooner which was to take them from Chicago to a French port, the intention being to re-erect the structure in that country. Some of the logs are 140 feet in length.

A friend of Harvard University, whose name is withheld, recently gave $10,000 to its Botanical Department for immediate expenditure. One-quarter of the sum will be used for the Gray Herbarium, while one-quarter will be devoted to the Botanic Garden, and the remaining half to the Botanical Museum for the completion of some of its collections.

The tomb of Alphand, the landscape-gardener who so greatly beautified Paris and secured the artistic success of her International Exposition, has just been completed in the cemetery of Père-Lachaise. It consists of a pyramidal structure ten feet in height, upon one side of which is a bronze bust of Alphand, by Dalou, one of the most famous of modern sculptors.

The Pennsylvania Society of the Sons of the Revolution has already marked, in an appropriate way, General Wayne's old headquarters at Centreville and Fort Washington, and has placed commemorative boulders at Valley Forge and at Washington's encampment-place at Gulph Mills. This year it expects to dedicate another votive stone at Queen's Lane, in Fairmount Park, a spot upon which Washington twice encamped.

Mr. Frederick McMonnies, the sculptor of the great fountain at the Chicago Fair, has just returned to Paris, charged with important commissions for the adornment of the approaches to Prospect Park, in Brooklyn. He is to design a great quadriga for the top of the Soldiers' Memorial Arch at the main entrance, and two large groups for the pedestals against its face; and also two groups of men and horses for the isolated pedestals which form part of the elaborate gateway built by Messrs. McKim, Mead & White, at the boulevard entrance toward the south-eastern extremity of the park.

It is now universally understood that the proper thinning out of fruit will help to give a greater quantity and much better quality, and that it is not only good practice for market-growers, whose profits depend on good, evenly graded fruit, but that it pays from every point of view in private orchards. One advantage of thinning not generally taken into account is explained by Professor Taft in the current number of *The American Agriculturist*. A tree which is allowed to ripen too great a number of fruits will be weakened, so that it will not be able to mature fruit-buds for next year's crop, and the tree will then waste half its time in recovering. The flesh of the fruit is largely water, it is true, but the seeds contain much mineral matter, and when we remember that a bushel of peaches from trees in which the fruit has not been thinned contains three times the number of pits which a bushel does from the thinned trees we can see what a draft this makes, both upon the soil and upon the tree, and how it helps to account for the irregular bearing and the premature exhausting of orchards. Peaches, Plums and other stone-fruit trees are particularly liable to injury from excessive bearing, but other fruit-trees are injured in the same way, although to a less extent.

We are glad to announce the appearance, after a long delay, of another part, the eleventh, of Mr. Hemsley's "Enumeration of Chinese Plants," published in the *Journal of the Linnæan Society*. The present instalment of this important work completes the Thymelæaceæ and embraces the Elæagnaceæ, Loranthaceæ, Santalaceæ, Balanophoreæ, Euphorbiaceæ, and the Urticaceæ through Ulmeæ, Celtidæ, Cannabineæ into Moreæ. Like the earlier parts, the present issue only confirms the reader's idea of the richness of the Chinese flora, especially in woody plants, and reminds him that western China still contains many trees and shrubs that are unrepresented in our gardens. Among the novelties here first described, which may be expected to flourish in this country, are Ulmus castaneifolia, a tree said to be fifty feet in height, with narrow Chestnut-like leaves, found by Henry in Hupeh and Szechuen; Celtis nervosa, from Formosa, and Morus Cathayana, from Hupeh, a species said to resemble the Indian Morus lævigata, from which it is distinguished by its relative short flower-spikes borne on short peduncles. Other trees included in this issue, which are still to be introduced into cultivation, although previously known to botanists, are Ulmus Davidiana, discovered by the Abbé David at Jehol; U. macrocarpa, which Mr. Hemsley surmises is not distinct from the last; Zelkova Davidii, a tree that is apparently not rare in the vicinity of Peking and at Jehol, and which has also been discovered in Corea; Celtis Bungeana, from Peking, and Pteroceltis Tatarinowii, a Celtis-like tree, of western China.

The railroad strike, which has practically put a stop to freight traffic between the Atlantic and the Pacific coasts, has brought about some strange conditions in the fruit market here. Two car-loads of California fruit, belonging to the Earl Fruit Company, by some good fortune reached this city on Monday in fair condition, and since it is not probable that any more California fruit will arrive for a month, the prices brought were unusually high. Plums sold for as much as $3.00 a box and upward; apricots, which a few days ago sold for seventy and eighty cents a box, went up to $3.05; peaches brought $3.30 a basket; Bartlett pears brought $4.75 a box, while Seckel pears brought $5.00, and a few Red Astrachan apples sold at the rate of $17.00 a barrel. Naturally, the stoppage of so large a source of supply as the California orchards has strengthened the prices of all local fruits like cherries, raspberries and watermelons, as well as the few oranges and pineapples which are now coming into this port. Bananas, too, are considerably higher, while lemons, on account of the falling off of the demand in the west, are piling up here and are becoming a drug in the market. The fruit-growers of California, especially those who depend on early fruits, must sustain very heavy losses. In such places as Vacaville telegraphic advices say that tons of early fruit are being dried or canned, as no fruit trains have started from that point for more than a week. Arrangements are not adequate, however, for drying all the fruit produced, and many of the canneries can get no sugar, so that much of it has already been wasted. At this time, in an ordinary season, 250 car-loads of fruit leave San José alone for the east every day, and it is impossible to can or dry this enormous quantity, so that if the blockade continues long enormous quantities of fruit will be sacrificed.

In Bulletin 67, just issued by the Cornell Agricultural Experiment Station, Professor Bailey gives some account of several garden vegetables which have been introduced into this country by the Chinese. The most valuable for American gardens is the so-called Chinese Cabbage, Pe-Tsai. It is a plant with a loose, lettuce-like head of crisp leaves, which may be used in all the ways in which cabbage is served. It is an autumn vegetable, and requires a cool moist soil. The same cultivation and attention is demanded for the Chinese Mustard, which is an excellent plant for greens, and produces an enormous amount of herbage. California Pepper Grass, which was brought prominently into notice by John Lewis Childs in 1890, seems to be a finely cut leaved form of a Mustard which has been long known in old gardens in this country, but has not been described either in American botanies or gardening books. It is one of the best of all plants for early spring greens. It is not known how or when the plant first came to this country, for, although it is cultivated in China and Japan, it does not appear to have been independently introduced from either of these countries in recent years. There are other Mustard-like plants which have been introduced from China which possess less merit than the foregoing species for American gardens. Among them are the Pak-Choi, used as greens and for the thick white leaf-stalk; and the tuberous-rooted Mustard, grown for its small turnip-like root. Of the cucurbitaceous plants introduced by the Chinese the best is the Wax Gourd, Zit-kwa, the fruit of which is excellent for conserves. It is easily cultivated, but requires a long season. The La-kwa, or Momordica Charantia, is not new to the American city trade, but has more merit as a curiosity and an ornamental vine than as an esculent for our taste. The Luffas, or Dish-cloth Gourds, are of two species, which differ chiefly in the contour of their fruits. The one best known has ribless cylindrical fruits, but the one chiefly cultivated by the Chinese in the neighborhood of New York has club-shaped ribbed fruit. These fruits are chiefly interesting because they yield a sponge-like fibre which is useful for household purposes. The Tau-kok is a Bean of some merit for late home use, but the Chinese Pea has little to recommend it, and the other vegetables named have hardly any value for our gardens.